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**DEPARTMENT OF TRANSPORTATION**

**Pipeline and Hazardous Materials Safety Administration**

**[Docket No. PHMSA–2014–0086]**

**Pipeline Safety: Guidance for Strengthening Pipeline Safety Through Rigorous Program Evaluation and Meaningful Metrics**

**AGENCY:** Pipeline and Hazardous Materials Safety Administration (PHMSA); DOT.

**ACTION:** Notice; Issuance of Advisory Bulletin.

**SUMMARY:** PHMSA published Advisory Bulletin ADB-2012-10 in the Federal Register on December 5, 2012, to remind operators of gas transmission and hazardous liquid pipeline facilities of their responsibilities under current regulations to perform evaluations of their Integrity Management (IM) programs using meaningful performance metrics. PHMSA is issuing this Advisory Bulletin to expand that reminder by informing owners and operators of gas and hazardous liquid pipelines that PHMSA has developed guidance on the elements and characteristics of a mature program evaluation process that uses meaningful metrics.

**FOR FURTHER INFORMATION CONTACT:** Chris McLaren by phone at 281-216-4455 or by email at [chris.mclaren@dot.gov](mailto:chris.mclaren@dot.gov). All materials in this docket may be accessed

electronically at <http://www.regulations.gov>. Information about PHMSA may be found at <http://www.phmsa.dot.gov>.

## **SUPPLEMENTARY INFORMATION:**

### **I. Background**

PHMSA has long recognized and communicated the critical importance of operator self-evaluation as part of an effective safety program. PHMSA has promoted and required the development and implementation of processes to perform program evaluations, including the regular monitoring and reporting of meaningful metrics to assess operator performance.

PHMSA further communicated this expectation in Advisory Bulletin ADB-2012-10, which was published in the Federal Register on December 5, 2012. That Advisory Bulletin explicitly reminded operators of gas transmission and hazardous liquid pipeline facilities of their responsibilities under current regulations to perform evaluations of their IM programs using meaningful performance metrics.

PHMSA has also recognized and emphasized the importance of operator senior management responsibilities to fully understand and acknowledge the implications of these program evaluations and to take the necessary steps to address deficiencies and make necessary program improvements. As these responsibilities are so important, PHMSA requires senior executives of operators to certify the IM program performance information they annually submit to PHMSA.

As required by the IM rules, operators must have a process to measure the effectiveness of their programs; a process that determines whether the program is effective in assessing and evaluating pipeline integrity and in improving the integrity of pipeline systems. Program evaluations can help organizations make better management decisions and support continual process improvement. These evaluations should include an assessment gauging how an operator's performance satisfies its identified safety performance goals.

Program and other evaluations may be conducted at different levels, including the company or corporate level, at a system level to gauge one pipeline system's performance against that of other systems within the organization or for selected assets with similar characteristics. Effective program evaluations should include all aspects of an operator's organization, not just the integrity group.

Incident/accident investigations and abnormal operations and root cause analysis frequently reveal that management systems and organizational program deficiencies or failures are important contributors to pipeline accidents. For this reason, it is important that program evaluations also identify potential organizational or programmatic deficiencies and failures that could have the potential to lead to pipeline incidents/accidents.

Operators should take effective corrective measures addressing IM program evaluation outcomes to improve programmatic activity as well as pipeline system performance and integrity. IM program evaluation processes should be formally controlled by operators and be an integral part

of the operator's quality control and quality assurance program. The formal process should include management's commitment to monitor and evaluate performance metrics.

Specific sections in the Federal IM regulations that directly require the need for operator program evaluation and the use of meaningful performance metrics include the following:

- For hazardous liquid pipelines, §§ 195.452(f)(7) and 195.452(k) require methods to measure program effectiveness. Appendix C to 49 CFR 195 provides specific guidance on establishing performance measures, including the need to select measures based on the understanding and analysis of integrity threats to each pipeline segment. API Standard 1160, “Managing Integrity for Hazardous Liquid Pipelines,” also provides additional guidance on the program evaluation process and the use of performance measures in improving performance.
- For gas transmission pipelines, §§ 192.911(i) and 192.945 define the requirements for establishing performance metrics and evaluating IM program performance. The gas requirements invoke ASME B31.8S-2004, Managing System Integrity of Gas Pipelines. Section 9 of this standard provides guidance on the selection of performance measures.
- For gas distribution systems, § 192.1007(e) requires development and monitoring of performance measures to evaluate the effectiveness of IM programs. An operator must consider the results of its performance monitoring in periodically reevaluating threats and risks. Guidance from ANSI/GPTC Z380, “Guide for Gas Transmission and Distribution

Piping Systems, 2012 Edition” and Section 9 of ASME B31.8S-2004, “Managing System Integrity of Gas Pipelines” can also be used for the selection of performance measures that can be applied to gas distribution systems.

When performing routine pipeline system inspections, PHMSA noted weaknesses in the development and implementation of program evaluations, including weaknesses in using meaningful metrics to identify opportunities for program improvements and corrective actions.

Additionally, NTSB Recommendation P-11-19, which was generated following the San Bruno, CA, failure investigation, recommended PHMSA develop and implement standards for IM and other performance-based safety programs that require operators of all types of pipeline systems to assess the effectiveness of their programs using clear and meaningful metrics and identify and then correct deficiencies.

In response to PHMSA’s self-identified concerns and the NTSB recommendation, PHMSA developed a guidance document titled “Guidance for Strengthening Pipeline Safety Through Rigorous Program Evaluation and Meaningful Metrics,” which is available at

<http://phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Pipeline/Regulations/IMPEG.pdf>.

Major topic areas addressed in the guidance document include:

- Establishing Safety Performance Goals.
- Identifying Required Metrics.
- Selecting Additional Meaningful Metrics.

- Metric Monitoring and Data Collection.
- Program Evaluation Using Metrics.

The guidance document includes tables listing regulation-required metrics and other programmatic and threat-specific metrics that operators could include in their documented IM program evaluations.

- Table 1 lists the IM-related metrics documented in pipeline operators' annual reports.
- Table 2 lists the threat-specific metrics required by § 192.945 for gas transmission and required by § 192.1007(g) for gas distribution systems.
- Table 3 provides guidance for operators and inspectors to identify meaningful metrics to help understand and measure the effectiveness of the individual program elements and processes used in an IM program.
- Table 4 provides guidance for operators and inspectors to identify meaningful threat-specific metrics that may be required to effectively measure the performance of gas transmission, hazardous liquid transmission and gas distribution pipeline IM programs.

## **II. Advisory Bulletin (ADB-2014-05)**

*To:* Owners and Operators of Natural Gas and Hazardous Liquid Pipelines

*Subject:* Guidance for Strengthening Pipeline Safety Through Rigorous Program Evaluation and Meaningful Metrics

*Advisory:* The Pipeline and Hazardous Materials Safety Administration (PHMSA) is issuing this Advisory Bulletin to inform owners and operators of natural gas and hazardous liquid pipelines that PHMSA has developed guidance on the elements and characteristics of a mature IM program evaluation process using meaningful metrics. This guidance document titled “Guidance for Strengthening Pipeline Safety Through Rigorous Program Evaluation and Meaningful Metrics,” is available on PHMSA’s public website at

<http://phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Pipeline/Regulations/IMPEG.pdf>,

and should be used when operators develop and perform IM program evaluations. This guidance document provides additional specificity to several of the topics detailed in a previously issued Advisory Bulletin, ADB-2012-10, “Using Meaningful Metrics in Conducting Integrity Management Program Evaluations.”

Operators under the current regulations are required to perform program evaluations and use meaningful metrics. PHMSA’s “Guidance for Strengthening Pipeline Safety Through Rigorous Program Evaluation and Meaningful Metrics” builds on existing standards and regulations to provide a more detailed and comprehensive description of the steps involved in program

evaluations as well as the selection of meaningful performance metrics to support these evaluations. The guidance expands and clarifies PHMSA's expectations for operator processes when measuring IM program effectiveness.

PHMSA inspectors will use the program evaluation guidance within "Guidance for Strengthening Pipeline Safety Through Rigorous Program Evaluation and Meaningful Metrics" as criteria when evaluating the effectiveness of operator IM program evaluations to assure operators are developing sound program evaluation processes and are developing and applying a robust and meaningful set of performance metrics in their program evaluations.

**Authority:** 49 U.S.C. Chapter 601 and 49 CFR 1.97.

Issued in Washington, DC, on October 09, 2014.

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Associate Administrator for Pipeline Safety.

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